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Published in:
Addiction

DOI:
[10.1111/add.13452](https://doi.org/10.1111/add.13452)

Publication date:
2016

Document Version
Author accepted manuscript

[Link to publication in ResearchOnline](#)

Citation for published version (Harvard):

Fitzgerald, N, Angus, K, Emslie, C, Shipton, D & Bauld, L 2016, 'Gender differences in the impact of population-level alcohol policy interventions: evidence synthesis of systematic reviews', *Addiction*, vol. 111, no. 10, pp. 1735–1747. <https://doi.org/10.1111/add.13452>

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Final version accepted by Addiction, May 2016.

Gender differences in the impact of population-level alcohol policy interventions: evidence synthesis of systematic reviews.

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Running head: Alcohol policy and gender: evidence synthesis

Word count: 3,972

Declarations of interest: The authors declare no competing interests. The work leading to this paper was funded and commissioned by Glasgow Centre for Population Health. No contractual constraints on publishing were imposed by the funder.

Abstract

Background: Consistent review-level evidence supports the effectiveness of population-level alcohol policies in reducing alcohol-related harms. Such policies interact with well-established social, cultural and biological differences in how men and women perceive, relate to and use alcohol, and with wider inequalities, in ways which may give rise to gender differences in policy effectiveness.

Aims: To examine the extent to which gender-specific data and analyses were considered in, and are available from, systematic reviews of population-level alcohol policy interventions, and where possible, to conduct a narrative synthesis of relevant data.

Methods: A prior systematic 'review of reviews' of population level alcohol interventions 2002-2012 was updated to May 2014, all gender-relevant data extracted, and the level and quality of gender reporting assessed. A narrative synthesis of extracted findings was conducted.

Results: Sixty-three systematic reviews, covering ten policy areas, were included. Five reviews (8%) consistently provided information on baseline participation by gender for each individual study in the review and twenty-nine (46%) reported some gender-specific information on the impact of the policies under consideration. Specific findings include evidence of possible gender differences in the impact of and exposure to alcohol marketing, and a failure to consider potential unintended consequences and harm to others in most reviews.

Conclusions: Gender is poorly reported in systematic reviews of population-level interventions to reduce alcohol-related harm, hindering assessment of the intended and unintended effects of such policies on women and men.

1 Introduction

2 The identification and implementation of effective policies to reduce the adverse consequences of
3 alcohol is a major public health imperative (1). While the heterogeneity of the interventions and
4 outcomes may impede understanding of the mechanisms of effect, (2–4), consistent review-level
5 evidence supports the effectiveness of population-level alcohol policy interventions. These include
6 those involving regulatory enforcement such as increased taxation or price controls, drink-driving
7 limits, and the regulation of availability and marketing (4,5).

8
9 There is persistent and strong evidence, from multiple countries worldwide, that men and women
10 relate to, perceive and use alcohol differently (6,7). *“Nearly everywhere that epidemiological or*
11 *ethnographic research has been carried out, historically and cross-culturally, men have consumed*
12 *more alcohol than women”* (8)(p153). Women are more likely to abstain; men are more likely to
13 drink heavily and develop alcohol problems (7,9). Women are more likely to suffer intimate partner
14 violence; men to engage in drink-driving (5).

15
16 While sex-linked biological differences influence alcohol consumption and related harms (7,10), the
17 variation in magnitude of differences in drinking between men and women (6,7,10,11), and the
18 convergence in consumption levels between men and women in many countries over recent
19 decades (7,11–14), suggest that societal and cultural influences may be more important. Public
20 excessive drinking has historically been perceived as a demonstration of ‘masculinity’ in western
21 societies (15). Alcohol consumption has historically been associated with fewer social sanctions for
22 men than women (10,16), particularly among poorer populations (17).

23
24 The convergence in drinking between women and men has largely been attributed to a rise in
25 women’s drinking rather than a fall in men’s (18–21). Hypothesized influences include greater
26 gender equality, marriage and parenting at an older age, increasing female participation in the
27 workplace and financial independence, changes in drinking environments such as bar design, and
28 more mixed-gender drinking occasions (16). The alcohol industry is likely to have played, and
29 continues to play, a role through deliberate differentiation between men and women in product
30 development, targeting and marketing: *“in many countries [women] have been the obvious group in*
31 *which the market has been far from saturated”* (16).

32
33 Policies which attempt to reduce alcohol-related harms interact with social, cultural and biological
34 differences in how men and women relate to, perceive, and use alcohol. For this reason alone, there
35 may be gender differences in the effectiveness and unintended effects of alcohol policy
36 interventions. In addition, these differences intersect with wider gender inequality, which is
37 acknowledged as an influential social determinant of health (22–24): *“sex and society interact to*
38 *determine who is well or unwell, who is treated or not, who is exposed or vulnerable to ill health and*
39 *how, whose behaviour is risk-prone or risk-averse, and whose health needs are acknowledged or*
40 *dismissed”* (23). Increasing recognition of structural gender inequality, and its links with economic
41 and other inequality, has led to efforts to ‘mainstream gender’ within policy-making more broadly
42 (25–28), as well as calls for greater attention to gender in research(23,24,29–31).

43
44 ‘Umbrella’ reviews (reviews of reviews) are increasingly used to synthesize systematic review
45 evidence (32). Published umbrella alcohol policy reviews (4,5) have not focused on how well-
46 represented females are in studies, or the potential role of gender differences in influencing overall
47 policy effectiveness. Therefore, the aims of this umbrella review were to:

- 48
49 • examine the extent to which sex/gender data and analyses were considered in, and are
50 available from, systematic reviews of population-level alcohol policy interventions

- conduct a narrative synthesis of findings from systematic reviews relating to sex/gender differences in effectiveness or potential effectiveness of such interventions.

Given the difficulty of separating differences in ‘sex’ (biological differences between men and women) and ‘gender’ (cultural constructions of masculinity and femininity), we refer to ‘gender’ to encompass both, in line with current thinking (33).

Methods

Search Strategy

Martineau and colleagues previously conducted a review of reviews in 10 alcohol policy areas (“the Martineau review”) without focusing on sex/gender (4). It was used as the starting point for this umbrella review. Their search strategy (Table 1) from October 2012, identified 52 reviews from 2002 onwards from six databases (4); all 52 were included in this current review.

<Table 1 to be inserted here>

The Martineau review search strategy was re-run for the period 1st July 2012 to 19th May 2014, to allow for delays in indexing. Six academic literature databases were searched: five the same as those searched by Martineau and colleagues (*Medline*, *Database of Abstracts of Reviews of Effects (DARE)*, *Cochrane Database of Systematic Reviews*, *Campbell Collaboration Library of Systematic Reviews*, and a site search of the National Institute for Health and Care Excellence’s (NICE) website); and one covering the same subject areas (*Applied Social Sciences Index and Abstracts*) as an older database used by Martineau and colleagues (*Social Policy and Practice*). No reviews included in Martineau were identified only in the latter database.

Results Screening

The search results were downloaded into bibliographic software (RefWorks) and duplicates removed. Two researchers (KA, NF) assessed the new reviews by first applying the Martineau review inclusion criteria (4)(p.259) to titles and abstracts, and then, if necessary, to the full text. The inclusion criteria were:

1. Does the review have a stated aim to evaluate interventions to reduce alcohol use and/or related harm, and report outcome data on alcohol use and/or related harm?
2. Does the review concern intervention effectiveness? (*And include studies with controlled, before-and-after or time series designs.*)
3. Is at least one of the interventions reviewed population level? (*Exclude interventions involving interaction between health professionals and individuals or groups, and interventions selectively targeting high-risk individuals, such as those convicted of alcohol-related offences.*)
4. Is the review a systematic review? (*If the study reports search strategy details, inclusion and exclusion criteria, and clearly identifies all included studies. Exclude reviews of reviews.*)

If the answer to all four questions above was yes, the review was included and assigned to the relevant policy area. In the event of any disagreement or doubt about eligibility that could not be resolved by discussion between KA and NF, a third researcher (LB) read the review to resolve disagreement by majority opinion. We planned to use updated reviews in place of the original reviews; however no updated reviews were identified by our search.

The Martineau review did not limit the searches by language, although all the included reviews were in English. In our updated search, we excluded non-English language reviews due to lack of resources for full-text translation. We planned to list any identified by our search, however none emerged. In both the original and updated searches, reviews were not excluded on the basis of methodological quality other than as outlined in the above criteria. This is in line with guidance on synthesizing evidence on health equity which emphasises an inclusive approach (34).

Data Extraction

Each review was assessed for relevant sex/gender content as follows:

- Searchable PDF documents: electronic searches were conducted for key terms (including: male female women woman man men girl boy gender sex mother father maternal paternal daughter son pregnant pregnancy schoolgirl schoolboy husband wife wives spouse spousal);
- Data extraction tables within reviews: scanned for findings reported by gender using the abbreviations 'f' and 'm', or 'w' and 'm'.
- PDF documents that were not fully text-searchable or photocopies: full text read carefully for key terms.

Data were extracted from systematic reviews using a standardised framework (Table 2), which was developed and revised by two researchers (NF, KA). Initially, data were extracted using the preliminary framework from three reviews, one from each of three policy areas, by the two researchers independently. The results were reconciled, and a consensus reached on adaptations to the framework. The adapted framework was applied independently to two new reviews in two more policy areas. The final version of the data extraction framework (Table 2) was agreed and applied to all the remaining identified reviews by one researcher. A sample of reviews in each policy area was checked for accuracy by a second researcher.

Many reviews included studies not relating to population-level alcohol policy interventions (e.g. studies measuring the effectiveness of policy interventions for other addictive substances or those targeting an individual rather than a population). As in the Martineau review, data relating to these studies were not extracted. Within the eligible reviews, data were extracted from relevant studies of any design.

<Table 2 to be inserted here>

Data analysis

The level and quality of reporting of sex/gender data in the reviews was analysed summatively for each policy area using the items included in the data extraction framework (Table 2). An overall narrative synthesis of sex/gender-relevant findings was conducted, as well as for individual policy areas.

Results

In total, 63 unique systematic reviews were identified and included (52 from the Martineau review, and 11 from our updated search: see Figure 1). Table 3 shows the reviews categorised into 10 broad alcohol policy areas as defined by Martineau: three reviews covered two policy areas and one review covered three policy areas.

<Figure 1 to be inserted here>

<Table 3 to be inserted here>

Level of consideration and availability of gender-relevant data (Table 4)

<Table 4 to be inserted here>

Most of the systematic reviews (87%, n=55) did not plan to conduct pooled analysis of intervention effects by gender (Table 4). Seven of the 8 reviews which did plan to do so reported insufficient data in the primary studies to enable such analysis (35–41). The eighth of these reported pooled effects by gender in the area of higher education interventions (42), and a review of mass media interventions did post-hoc pooled gender analysis (43) (see policy findings below).

Five reviews (8%) (37–39,41,44) ‘consistently’ provided information on baseline participation by gender for the individual studies included in the review; four of these were conducted for the Cochrane Library. Another review sometimes (45) and another rarely (46) provided such information; the rest (89%, n=56) never did so.

More than half of the reviews (54%, n=34) provided no information on individual study findings relating to the impact of the reviewed policy by gender, and there was wide variation in the location, quality and level of detail of information provided for those which did (Table 4).

Gender-relevant findings from systematic reviews

Notwithstanding the gaps in reporting at review level, available information relevant to gender is outlined below by policy area.

Alcohol server setting/drinking environment (Table S1 – 6 reviews)

Five reviews focused on policies to prevent alcohol-related harm or intoxication in or around licensed premises (47–51), with between 13 and 26 studies in each; a further review included a single study of warning labels (52). Across all six reviews, gender-relevant findings were reported only for a single included study - of ‘Operation Drinksafe’ (a personalised risk-assessment in bars involving the AUDIT screening tool and breath alcohol concentration measurement) – which reported a greater reduction in AUDIT scores in women (p1588, Van Beurden et al., (2000) cited in (47)).

Sales Availability (Table S2 – 8 reviews)

Eight reviews, including between 13 and 132 studies, considered policies limiting the availability of alcohol through hours/days of sale, outlet density and/or purchase age (53–60). Gender-relevant findings were reported for very few (15% or less) of the included studies in each review. Such data were reported for 5 of 88 studies in one review (54), all of which suggested that increasing outlet density was associated with increased consumption or harms (suicides, night-time crashes, assaults) in males, less so in females. Another review (60) reported relevant findings for 10 of 69 studies, that were more mixed suggesting either no effect or an enhanced effect in males.

In another review, relevant data were reported from one paper which found that following an extension of hours of sale in Scotland, women’s drinking increased while men’s decreased (Knight & Wilson (61) as cited in (59)). The same paper was cited in another review (56) as finding that the introduction of Sunday alcohol sales in Scotland was associated with an increase in consumption amongst males aged 18-45, with no significant change in women’s drinking..

Two reviews cited studies considering the effect of increased availability on assaults against women; one suggested no effect (Norstrom & Skog, 2003 cited in (56)) and the other found a decrease in assaults against women but could not conclude causation (Duailibi et al., 2007, cited in (62)).

No gender-relevant data were reported for the 132 studies included in the one review of minimum drinking age laws (58).

Illicit alcohol – 1 review

No gender relevant data were reported for the 14 studies included in the review of policy options to address illicit alcohol (63).

Taxation/pricing (Table S3 – 4 reviews)

Gender relevant findings were reported for fewer than 25% of the studies included in the reviews, which included between 9 and 50 studies overall. No consistent differences in the direct effect of increased price/taxation on consumption or harms in men compared to women were found.

Two reviews (46,64) reported findings from 5 studies suggesting that higher prices were associated with decreased male but not female harms, including suicide (Markowitz, 2003, cited in (46,64)) and sexually transmitted diseases (Grossman 2004; Carpenter 2005 both cited in (46); Markowitz et al., 2005; Chesson et al., 2000 both cited in (64)). A sixth study found an association between higher prices and improved use of birth control and condoms that was only significant in males (Grossman & Markowitz, 2005 cited in (64)). One other study (Heeb et al., 2003 cited in (65)) found a greater increase in male spirits drinking with a decrease in price.

Three studies found greater decreases in female than male drinking or harms with increased price (Chaloupka & Wechsler, 1996; Makela et al., 2008; Academy of Medical Sciences, 2004, all in (46); the latter also cited in (60)). A further study (Herttua et al. 2008a, as cited in (60)) found that a tax reduction increased alcohol deaths more in females than in males.

Finally, one study did not find any evidence that an overall increase in spirits consumption following a decrease in price differed by gender (Kuo et al., 2003 cited in (65)).

There was some consistency in studies considering indirect impact with five studies, all cited in one review (46), suggesting an increase in price would reduce rapes (Cook and Moore, 1993), child abuse perpetrated by females (but not males) (Markowitz & Grossman, 2000), sexual assault against women (Markowitz, 2000, second listing), unwanted pregnancies/teen abortions (Sen et al., 2003 also cited in (64)) and violence aimed at wives (Markowitz, 2000).

Alcohol Marketing, Mass Media, Promotion, Counter-Advertising (Table S4 – 7 reviews)

Of the 7 reviews, Booth et al. (46) included the most relevant findings: males were found more likely to be exposed to or influenced by broadcast advertising in 7 studies (Aitken, 1988; Casswell & Zhang, 1998; Chen et al., 2005; Kelly, 1998; Sargent, 2006; Stacy, 2004; Zwarun, 2006; all cited in (46)), notably for beer, and such exposure was associated with increased consumption of beer in two studies (Collins et al., 2003; Connolly, 1994, both cited in (46)). Two studies found that point of sale pricing/advertising may have increased female drinking to a greater extent than male drinking (Saffer & Dave, 2003; Smith et al., 2005; both cited in (46)); 2 found no gender difference (Pederson, 2002; Yang & Raghubir, 2005; both cited in (46)). Two studies found a greater exposure of females to billboard and print media advertising (Dring & Hope, 2001; Jernigan, 2004; both cited in (46)) and 2 studies suggested that the effects of advertising bans were generally larger for females (Saffer & Dave, 2003; Saffer & Dave, 2006; both cited in (46)). One study found an association between

possession of alcohol promotional items and binge drinking in girls and a stronger association between such possession and alcohol initiation in girls rather than in boys (Fisher, 2007, cited in (46)). Finally, a different study found that males were more likely to have alcohol promotional clothing items and that that was associated with a range of drinking variables (Workman, 2004, cited in (46)).

The Jackson et al. review (60) was conducted by members of the same team as the Booth review (46). It covered three policy areas, and rather than conducting a new review, reported on the earlier findings from the Booth review, however it summarised the findings slightly differently. It reported that younger age-groups and 15 to 17 year old girls experienced the greatest impact of alcohol advertising, but did not highlight the finding from Booth that males may be more influenced by and exposed to broadcast advertising.

Drink-driving (Table S5 – 12 reviews)

No two reviews reported gender-relevant information from the same primary studies of drink-driving policy. Reported studies suggested that such interventions have more of an impact on males than on females in reducing consumption: (Carpenter et al., 2007 cited in (36)); breath alcohol concentration (Zwicker, 2007 cited in (35); Kloeden & McLean, 1997; 1994 cited in (36)); crash-related hospital admissions (Hardes et al., 1985 cited in (66)); road traffic fatalities (Albalade et al., 2006, cited in (36)); and insurance claims for crashes (Mercer et al., 1996 also cited in (66)). Other studies suggested that females tended to be more compliant with drink driving laws (Timmerman et al., 2003; Boots and Midford, 1999 both cited in (67); Kaplan and Prato, 2007 cited in (36)). A small number of studies across the reviews involved male drivers only.

School-Based Interventions (Table S6 – 17 reviews)

There was no consistent evidence of gender differences in the effectiveness of school programmes targeting alcohol. Across all the reviews, gender relevant findings were reported for 14 studies, of which six suggested greater impact of the intervention in females, five suggested greater impact in males, and three found no gender differences. There was limited evidence that males may have responded better to classroom management interventions such as the 'Good Behaviour Game' (Kellam et al., 2008 cited in (38)). However, the review-level evidence for the effectiveness of school-based interventions was weak overall (4).

Higher Education-Based Interventions (Table S7 – 5 reviews)

There was no evidence to suggest gender differences in the effects of a range of higher-education interventions focusing on alcohol. One meta-analysis (42) of 62 individual and group-level interventions for first year college students found that gender was not a significant moderator for alcohol consumption post-intervention.

Interventions Targeting Families/Communities (Table S8 – 4 reviews)

Reported review-level findings did not suggest a consistent gender difference in the efficacy of family and community interventions: two cited studies found no significant moderation of effect by gender (Brody, 2006, Haggerty, 2007, both in (39)); another study suggested a negative impact on females only (Wiggins et al., 2009, cited in (68)); another a greater positive impact on males (Perry et al., 2003, cited in (69)); and a final study found a greater positive impact on females (Spath et al., 1999a cited in (39)).

Four trials of a female only intervention for daughters and their parents (mostly mothers) showed signs of efficacy in the short to medium term (39) (p.12).

Workplace Interventions (Table S9 – 4 reviews)

Few relevant findings were reported and there was no clear evidence overall for any specific gender differences from the studies cited in these reviews (41,45,70,71).

Discussion

Although there is widespread recognition that *“explicitly identifying to whom the evidence does or does not apply, is necessary to formulate social policy initiatives... and to determine what interventions are appropriate with particular populations”* (72), gender has not been well-reported in reviews of population-level alcohol policy. Across 10 policy areas, and 63 reviews of population-level alcohol policies, few or no reviews reported results by gender and some reported a lack of such data in the primary studies. Notwithstanding the lack of data in the reviews, the information extracted suggests that there are likely to be gender differences that are relevant to policy effectiveness in some areas.

Policy Implications

Possible gender differences exist in the area of alcohol marketing/mass media interventions, where young men may be more affected by broadcast advertising especially for beer; and young women by billboard/print advertising. If broadcast advertising was subjected to restrictions (as has been suggested (73) p19), which were not applied to print advertising, that may reduce advertising exposure to a greater extent in young men and requires further investigation.

In school and family interventions, a number of studies evaluated single-gender interventions aimed at daughters (along with a parent, mainly their mothers) cited in (37,38). These may reinforce gender stereotypes and inequality, for example, by invoking even by their existence, a sense of drinking being somehow more problematic, shameful or inappropriate for girls, than for boys (see de Visser (74,75)). It has been suggested that mass media campaigns focusing on ‘binge drinking’ can fall into this category or engage in ‘victim-blaming’ in relation to sexual assaults sustained after drinking alcohol (76). No measures of this potential unintended outcome were reported in any of the included reviews.

While there were no consistent trends in the many gender differences reported in the impact of increased alcohol prices or taxation on consumption or harms, studies did consistently report that such interventions may have reduced harms such as assaults. Importantly, these indirect outcomes were not reported in reviews for eight of the ten policy areas, despite an increasing focus on ‘harm to others’ from alcohol (77,78).

Research implications

This review suggests a significant gap in the literature, which is not unusual. Similar ‘gender blindness’ has been reported in research in other health areas (79–81) and is both a symptom of, and contributor to, wider gender inequality (22–24). More basic research is required to better consider, measure and report on the effectiveness of alcohol policy interventions by gender, as well as potential unintended consequences such as gender stereotyping, and indirect effects including ‘harm to others’.

Current developments may improve the analysis and reporting of sex and gender in health research. Many research and governmental organisations require sex/gender issues to be addressed in research proposals and policy initiatives (72). In addition, a group of science editors have consulted on common standards for reporting of sex/gender differences in scientific research (31). Specific guidance is available on how to address sex and gender issues in systematic reviews of policy interventions (82).

It remains to be seen how transformative initiatives to incorporate a gendered perspective will be: long-standing efforts to mainstream gender into policy-making (83) have faced challenges (84) and criticism for having a narrow 'technocratic' focus on processes (such as gender impact assessment (85)) while failing to achieve societal change (25,28). This review focused only on gender, however it is important to acknowledge that gender inequality intersects with other forms of inequality (including economic, racial, sexual orientation) in complex ways (23,30). These interactions can have important implications for alcohol-related harms (17,86,87), and require a broader focus in both research and policy (22,29).

Strengths and limitations

This umbrella review synthesizes a large amount of evidence about the impact of population-level alcohol policy interventions on males and females, and adds to the current literature on alcohol and gender, which focuses predominantly on consumption and consequences (7). Its value is constrained by a lack of focus on, and low levels of reporting of, gender-relevant data at review level, either due to gaps in primary studies, selective reporting in the reviews, or more likely both. This makes it difficult to speculate on the reasons for the differences found or to assume their wider transferability. Different reviews reported different aspects of the same primary studies and working from reviews impeded judgement of the quality of the primary evidence. Even reviews which sought to analyse by gender were largely unable to do so, suggesting that further study of the primary literature may not yield results that are any more conclusive.

Conclusions

Gender differences in experiences of direct and indirect harm from alcohol are well established (87–89) but appear to be rarely considered in policy reviews. Available evidence from systematic reviews suggests that there may be plausible and important gender differences in the impact of population-level alcohol policy interventions which require further consideration in research and policy, particularly in the area of advertising controls and mass media campaigns.

Acknowledgements: Funding for this review from Glasgow Centre for Population Health is gratefully acknowledged. Special thanks to Fred Martineau, Mark Petticrew, Elizabeth McGill and co-authors, for sharing their review data and answering our queries. NF, KA and LB are members of the UK Centre for Tobacco and Alcohol Studies (www.ukctas.net). Funding for UKCTAS from the British Heart Foundation, Cancer Research UK, the Economic and Social Research Council, the Medical Research Council and the National Institute of Health Research, under the auspices of the UK Clinical Research Collaboration, is also gratefully acknowledged.

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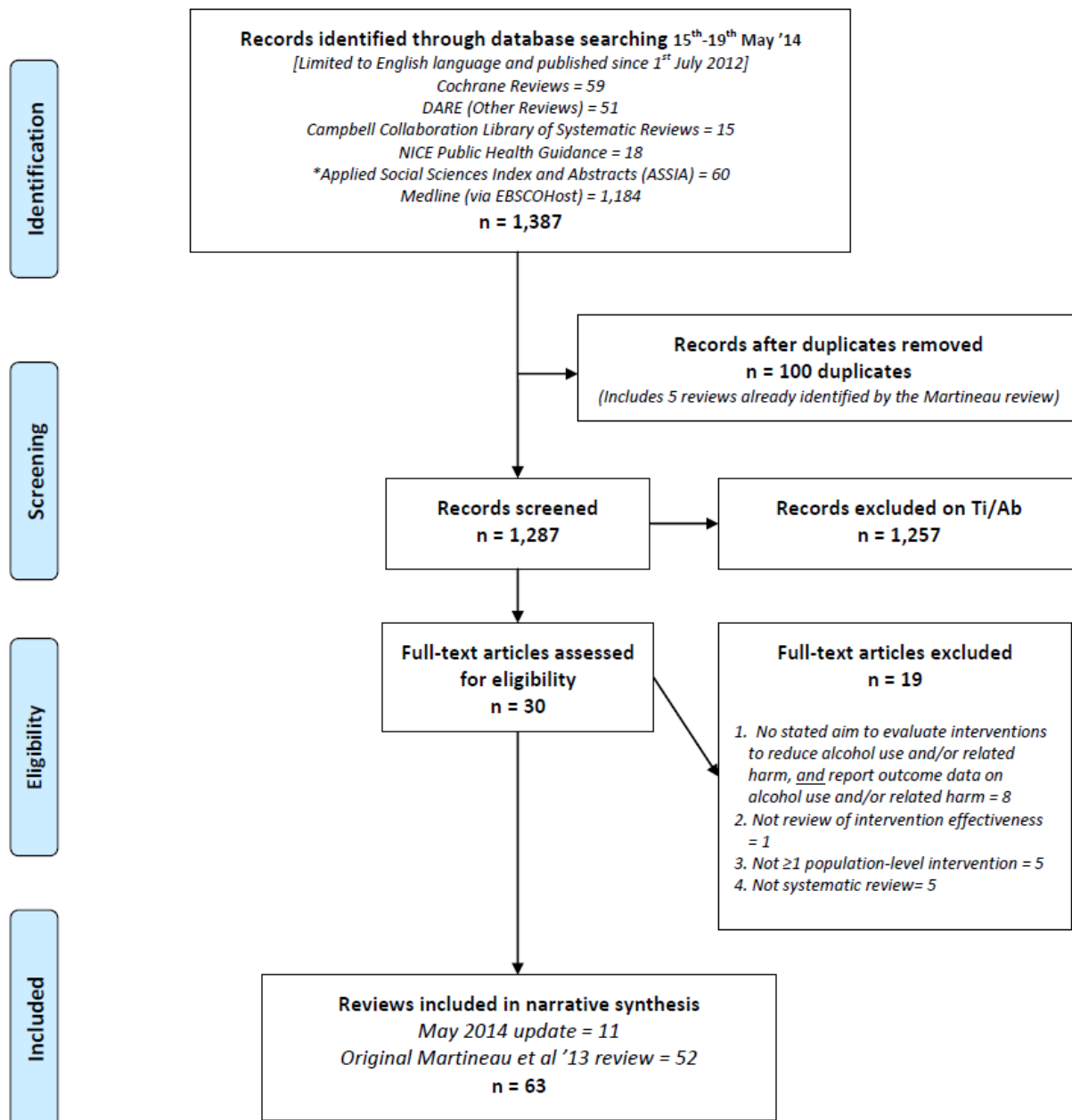
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Figure 1: Flow diagram of the review screening process updating the searches from Martineau *et al.* 2013



*Substitution database for Social Policy and Practice

Table 1: Search Strategy from Martineau et al., 2013 (4).

Alcohol terms	<u>AND</u>	Policy settings and interventions terms: <ul style="list-style-type: none"> • sexual or risky behaviour • roads and transport • public space • domestic • workplace • school • leisure • social • availability • affordability • acceptability <u>OR</u> Outcomes terms: <ul style="list-style-type: none"> • mental harm • communicable diseases • unintentional injury and accidents • violence and crime • employment • economic • environment • social <u>OR</u> Specific interventions terms	<u>AND</u>	Population-level terms	<u>AND</u>	Systematic review terms
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See Appendix A. 'Supplementary Data' of the Martineau review for the complete search strategy. Online at <http://dx.doi.org/10.1016/j.ypmed.2013.06.019>

Table 2: Final Framework for Data Extraction from Reviews

Item	Item description and/or instructions/response options
Study Details	
A. Review Title	Brief reference e.g. Jackson et al., 2010
B. Citation	Full citation.
C. Relevant studies	Number of relevant studies/total number of studies in review. Studies deemed relevant if they relate to a population-level alcohol policy intervention as defined by the Martineau review, and of any design.
Gender focus of review	
D. Did this review have a major and a priori focus on gender equity?	If so, enter 1, 2 or 3 to indicate which type, using criteria from Welch et al., 2013 (34) (p2): Type 1 Reviews assess effects of interventions in disadvantaged populations; Type 2 Reviews assess effects of interventions aimed at reducing social gradients across populations; Type 3 Reviews have a major focus on equity and are “designed to assess the effects of interventions not aimed at reducing inequity but where it is important to understand the effects of the intervention on equity, positive or negative”.
E. Was post-hoc analysis conducted of the effects of the intervention by gender?	Yes/No or N/A (not applicable) if a priori analysis by gender was planned.
F. Extract all gender-relevant data except from single-gender studies.	Cut and paste any data on gender if relevant to population level alcohol interventions or policy.
G. Extract all data from single-gender studies.	Cut and paste any data from single gender studies if relevant to population level alcohol interventions or policy.
Pooled data for all studies in review	
H. Is pooled baseline participation by gender reported?	Yes/No
I. If yes to 8, extract data	Provide data or N/A
J. Were pooled intervention effects by gender reported?	Yes/No
K. If yes to 10, extract data	Provide data or N/A
Data provided for individual studies in review Excluding single gender studies & only including data from population-level alcohol studies.	
L. Baseline participation reported by gender in table for individual studies	Consistently/Mostly/Sometimes/Rarely/Never
M. Intervention effects reported by gender for individual studies in the study table or narrative?	No/Table/Narrative/Both
N. Quality of data reported for intervention effects by gender for individual studies	None (if qualitative only) Poor (if very basic quantitative e.g. before and after measures given only) Good (if quantitative with effect size or p value or confidence interval) Variable (if different quality of reporting across different studies within the review)
O. Notes	

Table 3: Policy areas and reviews included

Policy Area	Types or examples of interventions included:	Reviews
1. Alcohol server setting	Drinking environment interventions including server training, warning labels etc.	(47–52)
2. Sales Availability	Restricting opening hours/days, outlet density, legal drinking age, monopolies.	(53–56,58–60,62)
3. Illicit Alcohol	Any interventions to tackle illicit alcohol.	(63)
4. Taxation/Pricing	Changing tax or price of alcohol.	(46,60,64,65)
5. Mass media/promotion	Advertising, mass media, promotion, counter-advertising, social marketing.	(43,46,60,90–93)
6. Drink-driving	Increased police patrols, sobriety checkpoints, blood alcohol limits etc.	(35,36,66,67,90,94–100)
7. School	Pre-school/school setting interventions e.g. education, life skills etc.	(37,38,40,98,101–113)
8. Higher education	e.g. regulation, media campaigns, social norms, multicomponent interventions.	(42,44,114–116)
9. Family and community	e.g. mailed literature, community wide campaigns.	(39,40,68,69)
10. Workplace	e.g. mandatory testing, staff training, mail-outs, peer-referral programmes.	(41,45,70,71)

Table 4: Review-level reporting of gender by policy area

	Data Extraction Item [Reference Letter from Table 2 where applicable]					
	Number of reviews	Number of reviews with planned gender focus/Number of reviews with post-hoc analysis by gender [D, E]	Number of reviews which pooled data by gender [H, I, J, K]	Frequency of baseline participation reported by gender for individual studies (number of reviews) [L]	Number of reviews with intervention effects reported by gender in table only/in narrative only/in both table and narrative [M]	Quality of data reported for gender intervention effects where reported (number of reviews) [N]
1. Alcohol server setting	6	0/0	0	Never (6)	1/0/0	Poor (1)
2. Sales Availability	8	0/0	0	Never (8)	0/1/4	Poor (2) Good (1) Variable (2)
3. Illicit Alcohol	1	0/0	0	Never (1)	0/0/0	
4. Taxation/Pricing	4	0/0	0	Rarely (1) Never (3)	1/1/2	Good (1) Variable (3)
5. Mass media/promotion	7	0/1	1	Sometimes (1) Never (6)	0/0/4	Poor (1) Good (1) Variable (2)
6. Drink-driving	12	2/0	0*	Never (12)	3/0/2	Poor (3) Good (2)
7. School	17	2/0	0*	Consistently (2) Never (15)	4/0/5	Poor (1) Good (8)
8. Higher education	5	1/0	1	Consistently (1) Never (4)	0/0/0	
9. Family and community	4	2/0	0*	Consistently (1) Never (3)	0/1/2	Poor (1) Good (2)
10. Workplace	4	1/0	0*	Consistently (1) Sometimes (1) Never (2)	0/1/1	Poor (1) Variable (1)
Totals for unique reviews**	63	8/1	2	Consistently (5) Sometimes (2) Rarely (1) Never (56) ^λ	8/4/17	Poor (10) Good (14) Variable (5)

**In the Type 3 reviews which planned to focus on gender, subgroup analysis by gender was not possible due to lack of suitable data.*

*** The totals are sometimes different to the sum of the data in columns as some reviews covered more than one policy area.*

^λ n=64 because the frequency of reporting was rated differently for two policy areas within the same review.